

## FY 2002-2004 PERFORMANCE BASED INCENTIVE

### SECTION 1 GENERAL INFORMATION

Performance Incentive Number:	PBI-12 (Environmental Management)		
Program Based Summary Number:	N/A		
Performance Incentive Short Title:	EM Science and Technology		
Revision Number & Date:	May 23, 2002		
Maximum Available Incentive Fee:	\$1.95 M		
Performance Incentive Type:	<input checked="" type="checkbox"/> Base	<input type="checkbox"/> Stretch	<input type="checkbox"/> Superstretch
Duration:	<input type="checkbox"/> Annual	<input checked="" type="checkbox"/> Multi-year	
Fee Payment Type:	<input checked="" type="checkbox"/> Completion	<input type="checkbox"/> Progress	<input type="checkbox"/> Provisional
DOE Technical Monitor:	George Schneider		
BBWI Technical Monitor:	Harold Blackman		
<i>(check appropriate box)</i>			

### SECTION 2 PERFORMANCE OUTCOMES

Check Appropriate Box:

- ☒ Outcome #1 Deliver science-based, engineered solutions.
- ☒ Outcome #2 Complete environmental cleanup responsibly.
- ☐ Outcome #3 Provide leadership and support to optimize investments.
- ☐ Outcome #4 Enhance scientific and technical talent, facilities, and equipment

### SECTION 3 PERFORMANCE MEASURES AND EXPECTATION (S)

*List associated performance measures and performance expectations for FY02-04. Identify associated PBS # for each performance measures as appropriate.*

**Measure 1:** Provide scientific and technical resources to support EM cleanup and Laboratory mission performance

**Expectation 1.1:** Provide key technologies from the INEEL Subsurface Science Initiative to characterize the extent, fate and transport of contaminants in the subsurface at the INEEL.

**FY02:**

- By September 30, 2002, provide preliminary data, results and analysis of the subsurface flow of water through the Snake River Plain, resulting form the "Regional Setting and Flow Dynamics of the Snake River Plain Aquifer in the INEEL Area" project. By September 30, 2002, provide a progress summary that evaluates whether a down-hole instrument to detect subsurface colloids (thought to transport Pu in the subsurface at INEEL) can be built, and provide fabrication feasibility and design recommendations for such an instrument.

**FY03:**

- By September 30, 2003, provide progress status on the development of a new tool for application in high-resolution seismic imaging surveys. The tool will be a downhole source of seismic energy small enough to fit into 4" to 6" holes.
- By September 30, 2003, provide the results of the use of molecular markers for the detection and tracking of environmental bacteria in the subsurface at INEEL.

**Expectation 1.2:** Support the management of residual waste sites, by coordinating INEEL stewardship-related investments in science and technology as well as positively contributing to the thorough long-term stewardship planning of the INEEL EM Program. INEEL's 2012 EM Operations objectives will be supported by INEEL Environmental Stewardship Initiative's integration of Science and Technology as follows:

## FY 2002-2004 PERFORMANCE BASED INCENTIVE

### FY02:

- In support of INEEL's and/or Ohio sites D&D&D and Site Closure goals, BBWI will integrate advance D&D technologies into operations. Specific technology applications are to focus on INEEL footprint reduction and Fuel Pools clean up in FY02. Deploy four technologies by September 30, 2002.
- To support INEEL Surveillance and Monitoring, BBWI will provide technical assistance for environmental site monitoring; including airborne and ground based monitoring. Demonstrate a field deployable monitoring capability by September 30, 2002.

**Measure 2:** Develop and implement a science and technology portfolio to address the INEEL 2012 high priority cleanup challenges.

### Expectation 2.1:

#### FY02:

By September 30, 2002, perform research and development activities to support characterization, processing, and disposition of the sodium-bearing waste and closure of the waste tanks at the INTEC Tank Farm Facility. Provide performance data on treatment processes, down-selection, and process optimization (The INEEL HLW Program is scheduled to perform a technology evaluation and down-selection by the end of FY02 in accordance with the 2012 Plan).

#### FY03:

During FY03 perform activities that focus on performing testing identified, through technology roadmapping, to finalize key process and facility parameters to support conceptual design. Document results from these initial investigations and implement into the Conceptual Design process for the SBW Treatment facility by September 30, 2003.

#### FY04:

Continue activities in support of the design process for the SBW treatment project. Specific focus will be on optimization of the baseline processes in support of completing CD-1. Continue activities in the development and validation of predictive models for SBW process optimization support. Document and implement the results into the Conceptual Design process for the SBW Treatment facility by September 30, 2004.

### Expectation 2.2:

#### FY02:

Provide cost-effective technologies for sampling, characterizing, cleaning, closing, and monitoring the INTEC Tank Farm Facility waste tanks. Deploy and provide a report documenting the deployment of an integrated washball/nozzle system by September 30, 2002. Also in FY02, develop a Simple Sampler tool for effectively collecting heel material samples, to be deployable in rinsed (i.e., solids transferred to another tank and ready for RCRA closure confirmatory sampling) tanks. Complete sampler design and document by September 30, 2002.

#### FY03:

Complete demonstration and begin deployment of the simple sampler during FY03. Provide a sampling tool and a report documenting results from the demonstration of the technology by September 30, 2003. Develop solids characterization for refinement and validation of the solids simulant to be used for SBW treatment process testing. Closely coordinate activities with related activities supported by the HLW Program.

#### FY04:

Deploy the Simple Sampler and perform representative solids sampling in full and emptied tanks. By September 30 2004, develop and provide a report documenting the results of the deployment. Tank selection for deployment is to be based on the HLW Program needs and priorities. Determine the need for "drop-and-stir" pumps to ensure sample representativeness. Depending on the performance of the technologies, revise tank Closure Plans to reduce the number and method of sampling required.

## **FY 2002-2004 PERFORMANCE BASED INCENTIVE**

### **Expectation 2.3:**

#### **FY02:**

Perform research and development activities in support of the shipment of all INEEL TRU waste to WIPP by 2012. By September 30, 2002, validate the gamma spectroscopy with acceptable knowledge (GSAK) system using the data from the actual RH-TRU waste from the INEEL inventory that was measured with the GSAK system in FY01. Based on documented results, provide recommendations for use of this alternative technology approach as well as a path forward on how to change the regulatory framework of RH-TRU waste characterization and certification to incorporate its use. The recommendation and regulatory change path forward will be provided by September 30, 2002.

### **Expectation 2.4:**

#### **FY02:**

Complete experiments to determine the ability to detect coincidence gamma rays from Cf-252 in the presence of a non-coincident background due to Cs-137. The Cs-137 source strength will be varied to support development of a predictive model of overall system response to the INEEL RH-TRU waste. Experiments and modeling will be completed and results provided by September 30, 2002. Documented results will provide a summary of the ability to detect the coincidence gamma rays as well as the capability of the predictive model and justification as to the need to continue research using higher strength Cf-252 and Cs-137 sources.

#### **FY03:**

Perform prompt coincidence measurements using higher strength Cf-252 and Cs-137 sources. These measurements are to be performed to validate extrapolated model results for higher activity RH-TRU wastes. Provide documented results by September 30, 2003. Based on the results, provide a recommendation on use of this alternative technology approach as well as a path forward on how to change the regulatory framework of RH-TRU waste characterization and certification to incorporate its use by September 30, 2002.

### **Expectation 2.5:**

#### **FY02:**

Perform research and development activities to support SNF Wet to Dry Storage and SNF Road Ready status by assembling an ultrasonic weld inspection platform that consists of all transducers, cabling and linear motion actuators. Complete prototype ultrasonic weld inspection head for the DOE standardized canister and install weld head on track system compatible with 18 inch standardized canister. By September 30, 2002, complete the full-scale prototype system and inspection tour

#### **FY03:**

By September 30, 2003, develop a stainless steel measurement technique and provide a report to include identification of required software changes, Test plan and results.

#### **FY04:**

Complete and document an integrated demonstration of the complete welding, inspection, and repair system. System documentation is to be adequate for ASME approval of process related to final closure weld on stamped vessels as well as procurement of the field system. By September 30, 2004, complete the documentation in order to support a deployment at an INEEL privatized facility.

### **Expectation 2.6:**

#### **FY02:**

Complete one set of mechanical property measurements on the prototype Ni-Cr-Mo-Gd steel. The goals are based on the scope of work for the NMFA research projects that will measure the mechanical properties and corrosion resistance of one heat of a Ni-Cr-Mo-Gd alloy. Complete experiments and document results by September 30, 2002.

#### **FY03:**

Finalize ASTM material specifications for Ni-Cr-Mo-Gd steel by September 30, 2003.

## FY 2002-2004 PERFORMANCE BASED INCENTIVE

### FY04:

Complete the ASME code case for Ni-Cr-Mo-Gd steel for base material. Complete documentation for the code case to submit to ASME by September 30, 2004.

### SECTION 4 FEE SCHEDULE

*Identify fee payment schedule for the PBI and the type of payments to be made (e.g., provisional, progress, final) and the basis of the payment (e.g., per canister completed, per assembly, earned value, etc.)*

**Annual completion fee payments will be made as follows:**

	FY02	FY03	FY04
<b>Measure 1:</b> Provide scientific and technical resources to support EM cleanup and Laboratory mission performance_			

Expectation 1.1	\$250K	\$250K	
Expectation 1.2	\$200K		

**Measure 2:** Develop and implement a science and technology portfolio to address the INEEL 2012 high priority cleanup challenges

Expectation 2.1	\$150K	\$100K	\$150K
Expectation 2.2	\$100K	\$100K	\$150K
Expectation 2.3	\$50K		
Expectation 2.4	\$50K	\$50K	
Expectation 2.5	\$50K	\$50K	\$100K
Expectation 2.6	\$50K	\$50K	\$50K

### SECTION 5 PERFORMANCE REQUIREMENTS

**PREVIOUS YEAR'S GATEWAY:** *(Describe previous year's gateway (if applicable) that must be completed before fee can be paid under this performance measure. The requirements listed below are the gateway only requirements for this Performance Measure.)*

None.

**GENERAL REQUIREMENTS:** *(Describe other performance required beyond those stated in measure or expectation such as cost constraints or requirements contained in the approved project plan.)*

None.

**DEFINE COMPLETION:** *(Specify performance elements and describe indicators of success [quality/progress]. Include baseline documentation/data against which completion documentation should be compared.) (Stretch goals must be documented by Baseline Change Proposals including documented and verified baselines which are approved by the CO.)*

Completion schedules and deliverables are as stated in Section 3. All activities described above have cost, schedule and associated scope as given in the approved technical task plans, work packages, or approved conceptual design plan for the individual activities.

**COMPLETE DOCUMENTS LIST:** *(List document(s) that should be submitted, data that should be available, actions to be taken by evaluator to determine actual performance to the requirements stated above.)*

As described in Section 3 above.

## FY 2002-2004 PERFORMANCE BASED INCENTIVE

**ASSUMPTIONS/TECHNICAL BOUNDARY CONDITIONS AND REMEDY STATED:** *(List foreseeable impacts to performance, which are not covered under the Contract. If the assumption or condition proves false the remedy shall be in effect. If remedy is not possible the next step is renegotiation.)*

If funding for any or all of the activities described in Section 3 becomes unavailable or altered, performance requirements will be renegotiated. If EM Operations clean-up plans and objectives change so as to require the activities given in Section 3 to be realigned, the performance requirements will be renegotiated

### SECTION 6 SIGNATURES



LISA A. GREEN  
Contracting Officer Representative  
DEPUTY ASSISTANT MANAGER  
Environmental Management

5-29-02

Date



S. G. Stiger  
Vice President  
Environmental Management Programs

5-23-02

Date



C. R. NICHOLS  
CONTRACTING OFFICER'S REPRESENTATIVE  
ASSISTANT MANAGER  
RESEARCH AND DEVELOPMENT

5-29-02

Date